



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,662	12/19/2001	Yinyan Huang	P-1094	6526

7590 10/15/2004
Scott R. Cox
Suite 2200
400 West Market St.
Louisville, KY 40202

EXAMINER

MARTIN, ANGELA J

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED: 10/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/025,662

Applicant(s)

HUANG ET AL.

Examiner

Angela J. Martin

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-14 and 17-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17, 18 and 21 is/are allowed.
- 6) ☒ Claim(s) 1-8, 10, 12-14 and 19, 20, 23 is/are rejected.
- 7) ☒ Claim(s) 11 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to the Amendment filed on August 5, 2004. The Applicant has amended independent claims 1 and 14. Additionally, Applicant has canceled claim 9 and has added new claim 23. However, a new ground of rejection is presented for the following reasons of record.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7, 10, 12-14, 19, 20, and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Toshihiko et al., U.S. Pat. No. 6,660,240 B1.

Rejection of claims 1-8, 10, 12-14, 23 drawn to a filter system; claims 19, 20 drawn to an exhaust treatment system.

Toshihiko et al., teach a filter system comprising a filter substrate coated with a material (col. 2, lines 66-67 and col. 3, lines 1-3), wherein the material comprises an inorganic adsorbent (col. 12, lines 10-17) secured to the substrate (carrier) by an inorganic binder (col. 3, lines 43-48), and an acidic material coated onto the substrate (col. 4, lines 25-27). It also teaches the composition of the filter substrate is alumina,

Art Unit: 1745

titania, silica-alumina (col. 3, lines 13-15). Additionally, it teaches the inorganic adsorbent is alumina, zeolite (col. 3, lines 44-49); inorganic adsorbent comprises a high surface area material of alumina, with a surface area greater than 100 m²/g (col. 3, lines 46-50). It teaches the inorganic binder is alumina sol, silica sol, zirconia sol (col. 4, lines 23-25). It also teaches the acidic material comprises an inorganic acid (col. 4, lines 25-27). The inorganic adsorbent comprises about 60-95 percent, inorganic binder comprises about 5-40 percent, acidic material comprises about 0.1-20 percent (Table 1). It also teaches a filter system comprising a filter substrate, a high surface area inorganic adsorbent secured to the substrate by an inorganic binder, and an inorganic acidic material coated onto the filter substrate (col. 1, lines 14-25). In addition it teaches an exhaust treatment system comprising the filter system of claim 1 and an oxidation catalyst (col. 3, lines 4-8); and an exhaust treatment system comprising the filter system of claim 14 and an oxidation catalyst (col. 4, lines 4-8). Although Toshihiko et al., do not specifically state “a filter system for adsorbing contaminants **from a molten carbonate fuel cell exhaust stream**”, the patentability of a product is independent of how it was made. *Ex parte Jungfer* 18 USPQ 1796, 1800 (BPAI 1991); *Brystol-Myers Co. v. U.S. International Trade Commission* 15 USPQ 2d 1258 (Fed. Cir. 1989). The burden is on applicants to show product differences in product by process claims. *In re Thorpe* 227 USPQ 964 (Fed. Cir. 1985); *In re Best* 195 USPQ 430 (CCPA 1977).

Thus, the claims are anticipated.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-8, 10, 12-14, 19, 20, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba et al., U.S. Pat. No. 6,093,378, in view of Toshihiko et al., U.S. Pat. No. 6,660,240 B1.

Rejection of claims 1-8, 10, 12-14, 23 drawn to a filter system; claims 19, 20 drawn to an exhaust treatment system.

Deeba et al., teach a filter system comprising a filter substrate (col. 17, lines 8-15) coated with a material, wherein the material comprises an inorganic adsorbent (support materials)(col. 12, lines 10-17) secured to the substrate (carrier) by an inorganic binder (col. 12, lines 1-9), and an acidic material coated onto the substrate (col. 10, lines 23-30). It also teaches the composition of the filter substrate is ceramic, alumina, or a metallic filter (col. 17, lines 8-15). Additionally, it teaches the inorganic adsorbent is silica, alumina, titania, titania-silica, silica-alumina (col. 12, lines 10-17); inorganic adsorbent comprises a high surface area material of alumina, with a surface area greater than 100 m²/g (col. 12, lines 31-43). It teaches the inorganic binder is alumina, silica, zirconia, titania, ceria (col. 12, lines 1-9). It also teaches the filter substrate comprises stainless steel screen (honeycomb)(col. 17, lines 13-15) and the inorganic binder comprises ceria (col. 12, lines 6-8). It also teaches the acidic material

Art Unit: 1745

comprises an inorganic acid (col. 18, lines 15-19). The binder comprises about 1 to 10 weight percent (col. 12, lines 1-6), greater than 45 percent inorganic adsorbent, and greater than 0.1 percent acidic material (col. 17, lines 64-67 and col. 18, lines 1-30). It also teaches a filter system comprising a filter substrate, a high surface area inorganic adsorbent secured to the substrate by an inorganic binder, and an inorganic acidic material coated onto the filter substrate (col. 12, lines 1-43). In addition it teaches an exhaust treatment system comprising the filter system of claim 1 and an oxidation catalyst (col. 17, lines 20-34); and an exhaust treatment system comprising the filter system of claim 14 and an oxidation catalyst (col. 17, lines 20-56). Although Deeba et al., do not specifically state “a filter system for adsorbing contaminants **from a molten carbonate fuel cell exhaust stream**”, the patentability of a product is independent of how it was made. *Ex parte Jungfer* 18 USPQ 1796, 1800 (BPAI 1991); *Brystol-Myers Co. v. U.S. International Trade Commission* 15 USPQ 2d 1258 (Fed. Cir. 1989). The burden is on applicants to show product differences in product by process claims. *In re Thorpe* 227 USPQ 964 (Fed. Cir. 1985); *In re Best* 195 USPQ 430 (CCPA 1977).

Deeba et al., do not teach the acidic material comprises an inorganic acid.

Toshihiko et al., U.S. Pat. No. 6,660,240 B1, teach a filter system wherein the acidic material is an organic acid or an inorganic acid.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Toshihiko et al., into the teachings of Deeba et al., because Deeba et al., teach the acidic material is organic, Toshihiko et al.,

teaches the acidic material is organic or inorganic, which provides equivalency of the acids employed in the filter system.

Allowable Subject Matter

5. Claims 11 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

The Applicant claims the filter system of claim 1 wherein the acidic material comprises heteropolyphosphoric acid.

In the prior art of record, there is no suggestion that the acidic material comprises heteropolyphosphoric acid.

The Applicant claims a process for preparing an exhaust treatment system for filtering exhaust gases from a molten carbonate fuel cell comprising preparing the filter system of claim 1, preparing an oxidation catalyst for fuel cells, and placing the filter system and oxidation catalyst on-line to filter the exhaust gases from the molten carbonate fuel cell.

Although the prior art discloses a process for preparing an exhaust treatment system for filtering exhaust gases, the prior art of record does not disclose a process for preparing an exhaust treatment system for filtering exhaust gases **from a molten carbonate fuel cell** as described above.

6. Claims 17, 18, and 21 allowed.
7. The following is an examiner's statement of reasons for allowance:

In claim 17, the Applicant claims a process for filtering contaminants present in an exhaust stream of a molten carbonate fuel cell comprising passing a fuel stream through the molten carbonate fuel cell, passing at least a portion of an exhaust stream containing inorganic contaminants through a filter system, and filtering the contaminants from the exhaust stream by use of the filter system, wherein the filter system comprises a filter substrate, an inorganic adsorbent secured to the substrate by an inorganic binder and an acidic material coated onto the substrate. Claim 18 depends on claim 17.

In claim 21, Applicant claims a process for filtering contaminants present in an exhaust stream of a molten carbonate fuel cell comprising passing a fuel stream through the molten carbonate fuel cell which generates an exhaust stream containing inorganic contaminants, passing at least a portion of an exhaust stream containing inorganic contaminants through a filter system, filtering the contaminants from the exhaust stream by use of the filter system, wherein the filter system comprises a filter substrate, an inorganic adsorbent secured to the substrate by an inorganic binder and an acidic material coated onto the substrate and passing the filtered exhaust stream through an oxidation catalyst.

Although the prior art discloses a process for filtering contaminants in an exhaust stream, the prior art of record does not disclose a process for filtering contaminants present in an exhaust stream **of a molten carbonate fuel cell** as described above.

Art Unit: 1745

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is 571-272-1288. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


AJM